

WHAT IS CLAIMED IS:

1 1. For use in a wireless telecommunication system
2 comprising a base station and a plurality of mobile
3 stations, a method for selecting a best fit transport
4 format combination (TFC) from a transport format
5 combination set that is assigned to at least one mobile
6 station by said base station, said method comprising the
7 steps of:

8 identifying TFC candidates in said transport format
9 combination set that are not best fit candidates;

10 deleting from said transport format combination set
11 said TFC candidates that are not best fit candidates until
12 a sole TFC candidate remains; and

13 identifying said sole remaining TFC candidate as a
14 best fit TFC candidate.

1 2. The method as set forth in Claim 1 wherein said
2 method further comprises the steps of:

3 iteratively applying at least one set reduction
4 constraint to said transport format combination set;

5 deleting TFC candidates from said transport formation
6 combination set that do not meet said at least one set
7 reduction constraint.

1 3. The method as set forth in Claim 2 wherein said
2 at least one set reduction constraint comprises one of:
3 a pre-selected transport format indicator list, an
4 identified size of a transport block, and a number of
5 transport blocks that equal zero.

1 4. The method as set forth in Claim 3 wherein said
2 identified size of a transport block corresponds to a size
3 of a protocol data unit of a highest priority logical
4 channel mapped to a dedicated transport channel.

1 5. The method as set forth in Claim 1 wherein said
2 method further comprises the steps of:

3 applying an iterative TFC selection algorithm to said
4 transport format combination set;

5 progressively deleting TFC candidates from said
6 transport format combination set that said iterative TFC
7 selection algorithm identifies as not best fit TFC
8 candidates.

1 6. The method as set forth in Claim 5 wherein said
2 iterative TFC selection algorithm comprises the steps of:

3 executing a first iteration to select a first
4 transport format for a first dedicated transport channel of
5 said transport format combination set;

6 deleting from said transport format combination set
7 all TFC candidates that do not have said first transport
8 format for said first dedicated transport channel.

1 7. The method as set forth in Claim 6 wherein said
2 iterative TFC selection algorithm further comprises the
3 steps of:

4 sequentially executing additional iterations to
5 sequentially select additional transport formats for
6 additional dedicated transport channels of said transport
7 format combination set;

8 deleting from said transport format combination set
9 all TFC candidates that do not have said additional
10 transport formats for said additional dedicated transport
11 channels.

1 8. The method as set forth in Claim 7 wherein said
2 iterative TFC selection algorithm further comprises the
3 steps of:

4 continuing said iterations and said deletions until a
5 sole TFC candidate remains; and

6 identifying said sole remaining TFC candidate as a
7 best fit TFC candidate.

1 9. The method as set forth in Claim 7 wherein said
2 iterative TFC selection algorithm further comprises the
3 steps of:

4 updating a Start TFCI Sequence after each iteration of
5 said TFC selection algorithm; and

6 updating a Current TFCI Sequence after each iteration
7 of said TFC selection algorithm;

8 wherein said Current TFCI Sequence at the end of an
9 iteration becomes a Start TFCI Sequence for the next
10 iteration.

1 10. The method as set forth in Claim 9 wherein said
2 iterative TFC selection algorithm further comprises the
3 steps of:

4 continuing to execute iterations of said TFC selection
5 algorithm until a sole TFCI sequence remains; and

6 identifying said sole remaining TFCI sequence as a
7 best fit TFC candidate.

1 11. For use in a wireless telecommunication system
2 comprising a base station and a plurality of mobile
3 stations, a method for selecting a best fit transport
4 format combination (TFC) from a transport format
5 combination set that is assigned to at least one mobile
6 station by said base station, said method comprising the
7 steps of:

8 applying an iterative TFC selection algorithm to said
9 transport format combination set to identify TFC candidates
10 that are not best fit candidates;

11 deleting from said transport format combination set
12 said TFC candidates that are not best fit candidates until
13 a sole TFC candidate remains; and

14 identifying said sole remaining TFC candidate as a
15 best fit TFC candidate.

1 12. The method as set forth in Claim 11 wherein said
2 iterative TFC selection algorithm comprises the steps of:

3 (a) prioritizing a plurality of dedicated transport
4 channels of a TFC set for which a transmission time
5 interval coincides with a current time;

6 (b) serving said prioritized dedicated transport
7 channels sequentially;

8 (c) inputting a TFC candidate set in a Start TFCI
9 Sequence;

10 (d) sorting a plurality of ready logical channels;

11 (e) inputting to a TFC select routine a maximum number
12 of protocol data units waiting for transmission;

13 (f) selecting TFC candidates;

14 (g) updating a Current TFCI Sequence;

15 (h) selecting the best fit transport format for a
16 current dedicated transport channel;

17 (i) updating a pre-selected transport format indicator
18 list to form a constraint for the next dedicated transport
19 channel; and

20 (j) determining whether a transport format has been
21 selected for all of the dedicated transport channels in
22 said TFC set.

1 13. The method as set forth in Claim 12 further
2 comprising the steps of:

3 going to a next dedicated transport channel when a
4 transport format has not been selected for all of the
5 dedicated transport channels in said TFC set; and

6 iteratively executing steps (d) through (j) for each
7 dedicated transport channel until a transport format has
8 been selected for all of the dedicated transport channels
9 in said TFC set.

1 14. The method as set forth in Claim 13 further
2 comprising the steps of:

3 identifying a sole remaining TFC candidate as a best
4 fit TFC candidate after a transport format has been
5 selected for all of the dedicated transport channels in
6 said TFC set.

1 15. The method as set forth in Claim 12 wherein said
2 TFC selection algorithm applies multiple set reduction
3 constraints to eliminate TFC candidates that are not best
4 fit candidates.

1 16. The method as set forth in Claim 15 wherein said
2 multiple set reduction constraints comprise:

- 3 a pre-selected transport format indicator list;
4 an identified size of a transport block; and
5 a number of transport blocks that equal zero.

1 17. For use in a wireless telecommunication system
2 comprising a base station and a plurality of mobile
3 stations, user equipment that is capable of selecting a
4 best fit transport format combination (TFC) from a
5 transport format combination set that is assigned to at
6 least one mobile station by said base station, wherein said
7 user equipment comprises:

8 a protocol stack that identifies TFC candidates in
9 said transport format combination set that are not best fit
10 candidates;

11 wherein said protocol stack deletes from said
12 transport format combination set said TFC candidates that
13 are not best fit candidates until a sole TFC candidate
14 remains; and

15 wherein said protocol stack identifies said sole
16 remaining TFC candidate as a best fit TFC candidate.

1 18. The user equipment as set forth in Claim 17
2 wherein said protocol stack iteratively applies at least
3 one set reduction constraint to said transport format
4 combination set; and

5 wherein said protocol stack deletes TFC candidates
6 from said transport formation combination set that do not
7 meet said at least one set reduction constraint.

1 19. The user equipment as set forth in Claim 18
2 wherein said at least one set reduction constraint
3 comprises one of: a pre-selected transport format indicator
4 list, an identified size of a transport block, and a number
5 of transport blocks that equal zero.

1 20. The user equipment as set forth in Claim 17
2 wherein said protocol stack applies an iterative TFC
3 selection algorithm to said transport format combination
4 set and progressively deletes TFC candidates from said
5 transport format combination set that said iterative TFC
6 selection algorithm identifies as not best fit TFC
7 candidates.

1 21. For use in a wireless telecommunication system
2 comprising a base station and a plurality of mobile
3 stations, a method for minimizing a search time for
4 selecting a best fit transport format combination (TFC)
5 from a transport format combination set that is assigned to
6 at least one mobile station by said base station, said
7 method comprising the steps of:

8 applying an iterative TFC selection algorithm to said
9 transport format combination set to identify a TFC
10 candidate that is a best fit candidate in said transport
11 format combination set;

12 iteratively reducing a size of said transport format
13 combination set to a smaller size; and

14 iteratively searching said smaller size of said
15 transport format combination set to identify best fit TFC
16 candidates.

1 22. The method as set forth in Claim 21 further
2 comprising the steps of:

3 (a) prioritizing a plurality of dedicated transport
4 channels of a TFC set for which a transmission time
5 interval coincides with a current time;

6 (b) serving said prioritized dedicated transport
7 channels sequentially;

8 (c) inputting a TFC candidate set in a Start TFCI
9 Sequence;

10 (d) sorting a plurality of ready logical channels;

11 (e) inputting to a TFC select routine a maximum number
12 of protocol data units waiting for transmission;

13 (f) selecting TFC candidates;

14 (g) updating a Current TFCI Sequence;

15 (h) selecting the best fit transport format for a
16 current dedicated transport channel;

17 (i) updating a pre-selected transport format indicator
18 list to form a constraint for the next dedicated transport
19 channel; and

20 (j) determining whether a transport format has been
21 selected for all of the dedicated transport channels in
22 said TFC set.

1 23. The method as set forth in Claim 22 further
2 comprising the steps of:

3 going to a next dedicated transport channel when a
4 transport format has not been selected for all of the
5 dedicated transport channels in said TFC set; and

6 iteratively executing steps (d) through (j) for each
7 dedicated transport channel until a transport format has
8 been selected for all of the dedicated transport channels
9 in said TFC set.

1 24. The method as set forth in Claim 23 further
2 comprising the steps of:

3 identifying a sole remaining TFC candidate as a best
4 fit TFC candidate after a transport format has been
5 selected for all of the dedicated transport channels in
6 said TFC set.

1 25. The method as set forth in Claim 22 wherein said
2 TFC selection algorithm applies multiple set reduction
3 constraints to eliminate TFC candidates that are not best
4 fit candidates.

1 26. The method as set forth in Claim 25 wherein said
2 multiple set reduction constraints comprise:
3 a pre-selected transport format indicator list;
4 an identified size of a transport block; and
5 a number of transport blocks that equal zero.